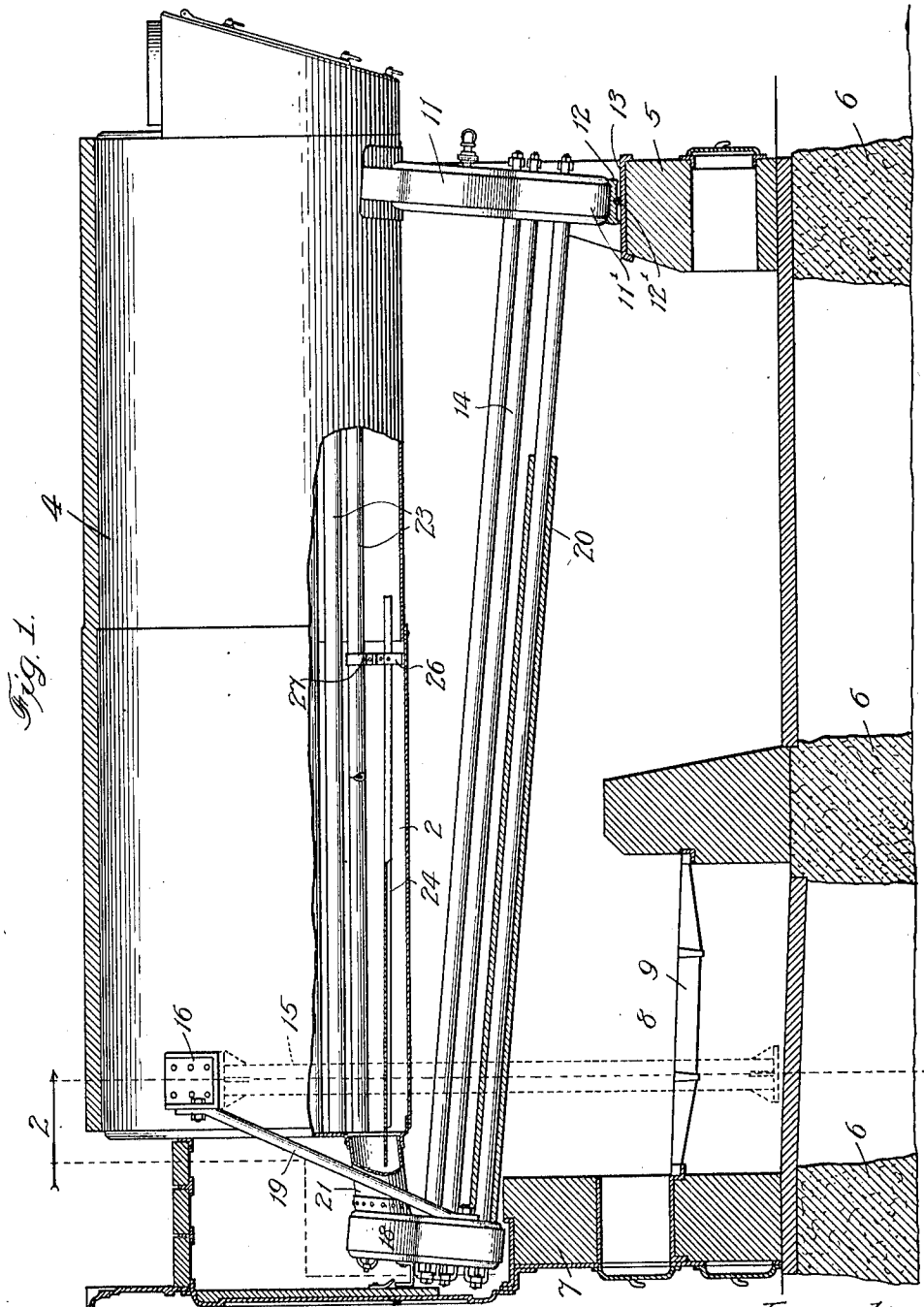


C. KROESCHELL.
STEAM BOILER.
APPLICATION FILED APR. 15, 1912.

1,035,607.

Patented Aug. 13, 1912.
3 SHEETS—SHEET 1.



Witnesses:

Edw. C. Ayford,
Chas. H. Bull,

Inventor:

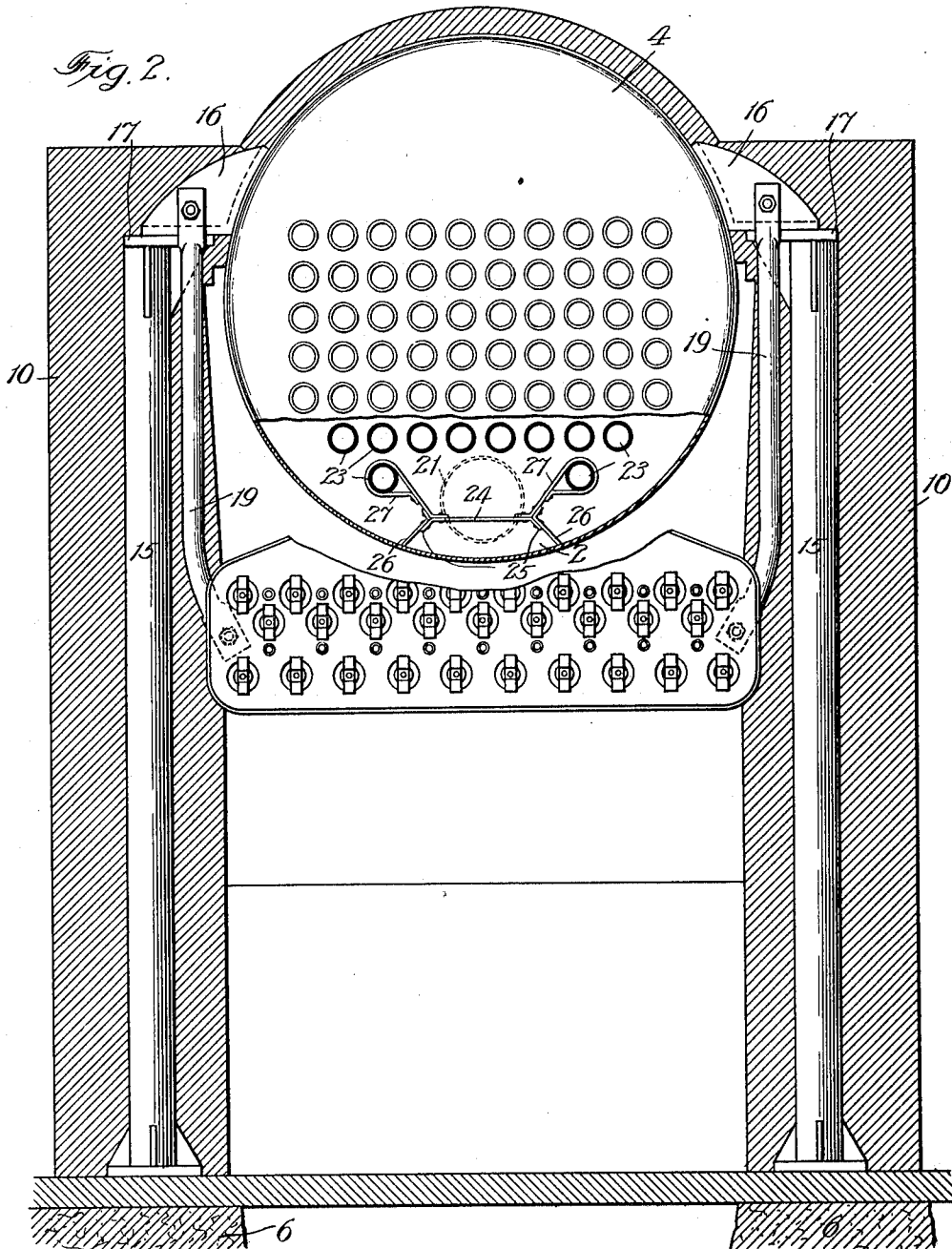
Charles Kroeschell,
By Dyrenforth, Lee, Cutton and White,
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3 SHEETS-SHEET 2.



Witnesses:

Ed. C. Gaylord
Chas. H. Buell

Inventor:

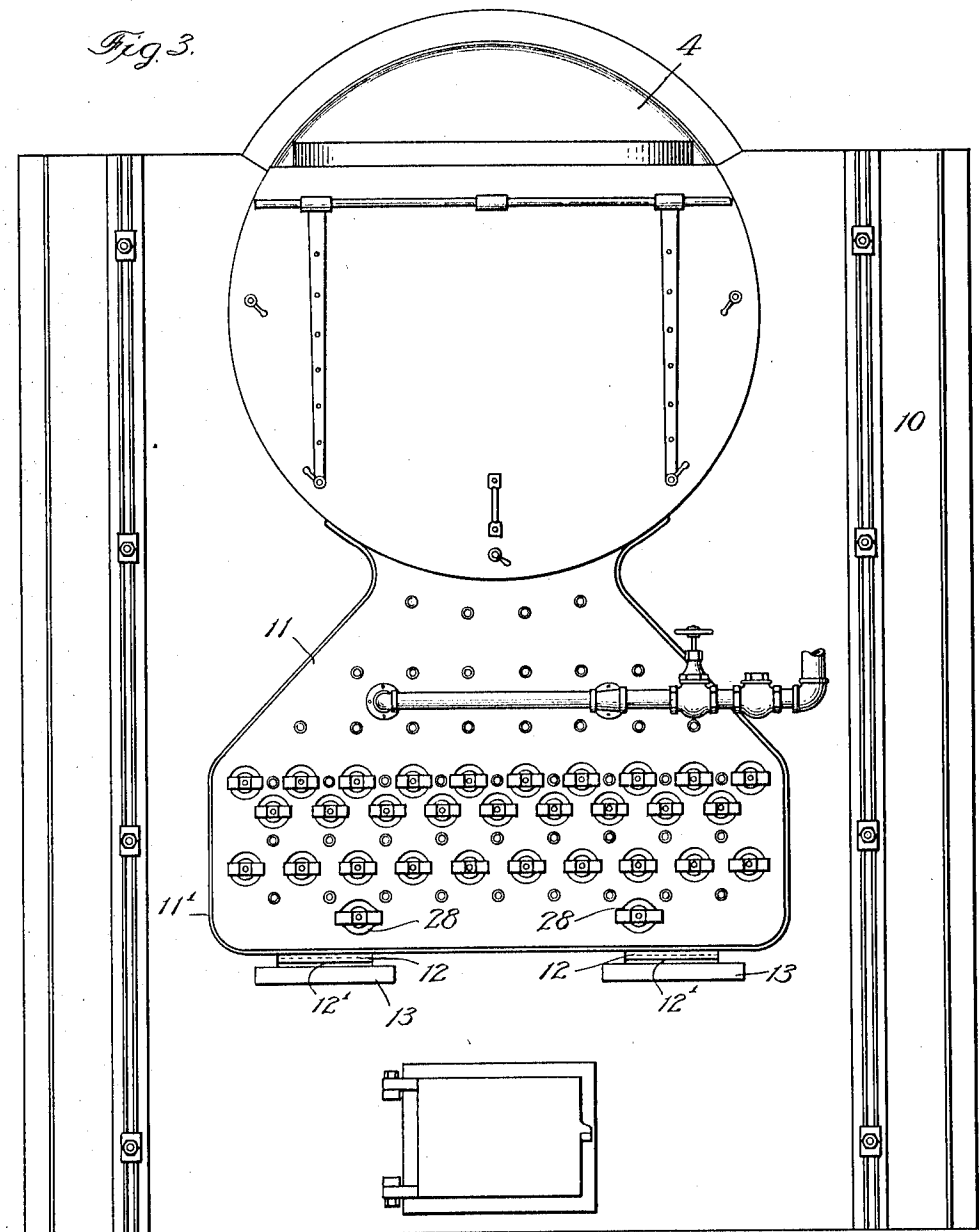
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3 SHEETS-SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES KROESCHELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO KROESCHELL BROS. CO.,
OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

STEAM-BOILER.

1,035,607.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed April 15, 1912. Serial No. 690,746.

To all whom it may concern:

Be it known that I, CHARLES KROESCHELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Steam-Boilers, of which the following is a specification.

The improvements hereinafter set forth relate to the combined water and fire tube type of boiler.

In the accompanying drawings, Figure 1 shows my improved boiler by a partly broken and sectional view in side elevation; Fig. 2 is a section on the vertical and irregular lines 2, Fig. 1, and Fig. 3 is a view of the boiler in rear elevation.

The fire-tube member 4 of the boiler, which may be of ordinary general construction, is supported at its inner end on the rear wall of the boiler-housing, ordinarily of brick, rising from a substantial foundation 6, the front wall 7 of which contains the usual fire and ash-pit doors leading to the fire-chamber 8 respectively above and below the grate 9 therein. In the present construction the side-walls 10 are shown to extend upwardly far above the longitudinal axis of the member 4, thereby to house it to the greatest practicable extent and subject an accordingly large portion of its surface to the direct influence of the hot products of combustion from the fire-chamber. The member 4 is carried at its inner end on the rear wall 5 through the medium of a water-head or manifold 11 bearing upon a seat 12 on a roller 12¹ upon a cast-metal plate 13 on that wall, the seat being thus movable to allow for the contraction and expansion of the water-tubes 14, hereinafter described. At its forward end the member 4 is wholly supported by metal pillars 15, 15 rising from the foundation in the masonry of the side-walls 10, and securely fastened at their upper ends to opposite sides of the fire-tube member through the medium of ears 16 extending therefrom upon plates 17 on the upper ends of the pillars. A front water-head or manifold 18 is also carried by these pillars through the medium of hanger-bars 19, 19, in the masonry of the side-walls, secured at their lower ends to the rear face of that manifold and at their upper ends to the ears 16. The water-tubes 14 connecting the two manifolds extend inclinedly between them and over the fire-

chamber and course of the products of combustion therefrom, the lower tubes being sheathed, as usual, in fire-clay 20, throughout the greater part of their length, for the combustion-enhancing effect of the heat they gather upon the gases from the fire-chamber.

The manifold 18 is connected to communicate with the boiler-member 4 centrally of the lower portion of its forward end by a single large neck 21. From between the ends of this neck extends lengthwise into the shell, below the fire-tubes 23 therein and spaced from its bottom to form a chamber 22, an apron 24 of sheet-metal having downwardly-flaring lateral edges 25 to which legs 26 are secured to support on the shell-bottom the apron near its inner end, which may extend to any desired distance into the shell, but preferably, as shown in Fig. 1, beyond the vertical center thereof. Straps 27 are shown extending from the apron and wrapped about tubes 23 to fasten it in place. The single relatively-large neck connecting the water-inlet end of the member 4 with the manifold 18 is advantageous in affording a stronger and generally better connection between these parts than the plurality of relatively-narrow pipes ordinarily provided for the feeding purpose.

The apron 24 is an important feature of my improvement, inasmuch as by directing forcibly a portion of the inflow from the water-tubes toward the rear manifold, it produces automatic washing of the bottom of the shell, thereby preventing lodgment of sediment thereon, since solid matter precipitated out of the water is forced by the flow underneath the apron into the manifold 11, which is elongated downwardly to afford a settling-chamber section 11¹, shown in Fig. 1 to be incased by the wall 5 to shield it from the direct action of the hot gases. The rear manifold is provided with hand-holes 28 through which to enable the sediment to be cleaned out at intervals. By thus preventing the deposit of sediment in the shell and causing the same to be accumulated in the chamber 11¹, circulation and re-circulation thereof through the member 4 and its ultimate deposit as scale in the shell and water-tubes are effectually avoided. The described construction, furthermore, enables the manifolds and connections as well as the boiler 4 to be made entirely of boiler-plate.

By wholly supporting the front wall of the boiler on pillars, thus independently of the brickwork, the latter is relieved of its weight, and repairing thereof and of the boiler is greatly facilitated.

What I claim as new and desire to secure by Letters Patent is—

1. A boiler-structure comprising, in combination, a housing containing a fire-chamber, a fire-tube boiler having a depending manifold at its rear end by which it is supported on the rear housing-wall, pillars supporting said boiler at its forward end, whereby it is unsupported except at its rear end by said housing, a manifold at the forward end of and communicating with said boiler and supported thereon to be carried by the pillars, and water-tubes extending over said chamber and connecting the manifolds.

2. A boiler-structure comprising, in combination, a housing containing a fire-chamber, a fire-tube boiler having a depending manifold at its rear end, by which it is supported on the rear housing-wall, and ears on opposite sides near its forward end, pillars supporting said boiler at said ears, whereby it is unsupported except at its rear end by said housing, a manifold at the forward end of and communicating with said boiler, hanger-bars depending from said ears and carrying the forward manifold, and water-tubes extending over said chamber and connecting the manifolds.

3. In a boiler-structure, the combination of a fire-tube boiler, a manifold supported at the rear-end portion of said boiler and a manifold supported near the front end thereof, water-tubes extending lengthwise of said boiler between and connecting the

manifolds, a neck connecting the forward manifold with said boiler through its front end, and an apron extending from said neck lengthwise in said boiler along the bottom thereof and forming with said bottom a space open at its sides and ends.

4. In a boiler-structure, the combination of a fire-tube boiler, a manifold supported at the rear-end portion of said boiler and a manifold supported near the front end thereof, water-tubes extending lengthwise of said boiler between and connecting the manifolds, a neck connecting the forward manifold centrally of its upper part with said boiler centrally of the lower part of its front end, and an apron extending from within the neck lengthwise in said boiler along the bottom thereof and forming with said bottom a space open at its sides and ends.

5. In a boiler-structure, the combination of a fire-tube boiler, a manifold supported at the rear-end portion of said boiler and a manifold supported near the front end thereof, water-tubes extending lengthwise of said boiler between and connecting the manifolds, a single large neck connecting the forward manifold centrally of its upper part with said boiler centrally of the lower part of its front end, and an apron extending from within the neck lengthwise in said boiler along the bottom thereof and forming with said bottom a space, the apron having downwardly-flaring edges, supporting-legs near its inner end, and straps extending from it about tubes in said boiler.

CHARLES KROESCHELL.

In presence of—

NELLIE B. DEARBORN,
RALPH A. SCHAEFER.